CLAIM AMENDMENTS

1. (Withdrawn and Currently Amended) A method for the manufacture of a highly active rubber powder with a geometrical surface of 0.4 to 5 m^2/g from scrap tires and vulcanized waste of rubber articles based on different rubber types in an extrusion type apparatus under thermomechanical action comprising reducing the size of scrap tires and/or vulcanized waste of rubber articles to rubber particles by subjecting the scrap tires and/or vulcanized waste of rubber articles to:
a pulsating volume strain of 15 to 250 MPa increasing at a rate of 5 to 90 MPa/s, with an amplitude +/- 5 to 20 MPa and a frequency of 5 to 600 Hz, as well as with a temperature in the range of 90 to 380°C increasing at a rate of 50 to 150°C/s accompanied by the simultaneous gas saturation of rubber with degradation products of plasticizing agents and other constituents ~~belonging to the rubber composition~~, ~~their comminution~~ with a combining of such components initially taking place accompanied by the formation of a porous structure in the volume of the particles, and in the case of a marked volume strain reduction at a rate of 50 to 150 MPa/s, the porous structure is then destroyed, ~~the~~ wherein geometrical ~~surface~~ surfaces of the rubber particles are ~~is~~ increased and the particles are cooled.

2. (Withdrawn) The method according to claim 1, wherein the vulcanized waste of rubber articles and scrap tires comprises isoprene, butadiene, styrene butadiene, nitrile butadiene rubbers, including hydrogenated carboxylate, ethylene-propylene, fluorine, fluorosilicone, butadiene vinyl pyridine, silicone, epichlorohydrin, polychloroprene, chlorosulphonated, polyisobutylene and acrylate rubbers, as well as mixtures thereof.

3. (Withdrawn and Currently Amended) The method according to claim ~~1wherein for the destruction thereof there is~~ which comprises a deformation of vulcanized rubber pieces in the range of 105 to 250% of ~~the~~ a limit of ~~the~~ an elastic component of rubber deformation, accompanied by a simultaneous temperature reduction at a rate of 70°C/s to 150°C/s.

4. (Withdrawn and Currently Amended) The method according to claim 1 wherein for the increase of the geometrical ~~surface~~ surfaces of the rubber powder particles by 15% to 40%, homogeneity modifiers are introduced, which homogeneity modifiers ~~comprising~~ comprise alcohol telomers of the formula $H(CH_2\text{-}CF_2)_n\text{-}CH_2OH$, where n>4, N-nitrosodiphenylamine, N-cyclohexylthiophthalimide in a quantity of 0.1 to 1.9%.

5. (Withdrawn and Currently Amended) The method according to claim 1 wherein for the manufacture of a highly active rubber, from rubber article waste whose composition lacks constituents degradable at high temperatures, alcohol telomers, sulphenamide M, sulphenamide Z, stearic, oleic, citric and oxalic acid are introduced in a quantity of 0.2% to 5.0%, and are combined with rubbers ~~and~~ to form volatile substances at a temperature of 70°C to 120°C.

6. (Withdrawn) The method according to claim 1 wherein for the manufacture of mixed thermoelastoplastics there is a size reduction of waste of rubber articles and waste of thermoplastics and/or thermoelastoplastics, comprising polyethylenes, polypropylenes, polyvinyl chlorides, polyethylene terephthalates, styrene-butadiene block copolymers.

7. (Currently Amended) An apparatus for the manufacture of highly active rubber powders from scrap tires and waste of rubber articles, which apparatus comprises a cylindrical casing having a charging connection and a discharging connection, and within which casing are first and second ~~formed a compacting and~~ size reducing ~~zone, which~~ crushing zones, wherein present through each of these zones ~~have~~ is a compacting worm with a reduction in the depth of grooves between combs decreasing in ~~the~~ a direction of the ~~size reducing zone~~ crushing zones, and an activator in the form of a rotating body, on whose outer working surface slots are formed, each of the ~~two~~ compacting worm ~~worms~~ and the activator being mounted in rotary manner coaxial relative to ~~the~~ an inner surface of the casing ~~inner surface~~ accompanied by the formation of an annular clearance with the casing's inner surface ~~latter~~, and within the casing, the compacting worm and the activator being provided with cooling elements ~~comprising two size reducing zones,~~ ; and

wherein the first size reducing crushing zone ~~being formed by~~ has a charging area, a compacting area and a first crushing area, and the compacting worm is a multistart compacting worm with an interturn gap volume decreasing in ~~the~~ a direction of the discharge connection and the casing surrounding the ~~same~~ discharge connection; ~~, whose~~ wherein the casing's inner surface ~~is formed~~ in the compacting area ~~by~~ includes a conical opening inclined in ~~the~~ a direction of the discharge connection and having 3 to 6 ribs with a rectangular cross-section engaging in the interior of the casing; wherein the first ~~size reducing~~ crushing zone the casing inner surface ~~is formed by~~ includes a cylindrical opening having a diameter which is 1.003 to 1.02 times larger than ~~the~~ a diameter of the compacting worm, and ~~into~~ the casing inner surface ~~are incorporated with~~ includes a starting cut pitch 0.5 to 1.5 times larger than a ~~the~~ starting cut pitch of the compacting worm, wherein helical notches are present in multistart form with 3 to 50 starts and a constant depth in ~~the~~ a straight and/or reverse direction and where a ratio of the ~~extensions~~ of the compacting area and the first ~~size reducing~~ crushing area along ~~the~~ a rotation axis of the worm is in the range 1:0.5 to 0.5:1; ; wherein said ~~compacting and~~ first and second size reducing crushing zones are formed on replaceable, detachable sleeves, which are mountable on a shaft or on the casing, and have on one side of ~~the~~ each sleeve ~~said~~ are working surfaces and on the other side of each sleeve ~~the~~ are helical grooves with an increased surface area of ~~the~~ walls of the sleeves for pumping a cooling medium ~~element~~; the second size reducing zone ~~being formed by~~ having a gas saturation area, a second crushing area, and a discharging area, and including an activator in the form of a rotating body and a discharge worm rigidly connected thereto and fitted in aligned manner with the compacting worm, as well as a cylindrical casing surrounding the activator and the compacting worm ~~two means~~, while ~~in the~~ an outer surface of the activator ~~are incorporated with~~ includes a pitch which is 1.1 to 2.5 times greater than ~~the~~ a starting cut pitch of the compacting worm, multistart helical notches with a constant depth in ~~the~~ straight and reverse directions with the same pitch and the same number of starts, and on ~~the~~ an outer surface of the discharge worm are ~~formed~~ multistart, helical combs in a straight direction with a pitch 1.15 to 3.0 times greater than the starting cut pitch of the compacting worm with an interturn gap increasing in the direction of the discharge connection, the helical combs ~~of the worm~~ being constructed continuously or

are interrupted by helical notches in ~~the~~ a reverse direction with a pitch equal to a ~~the~~ starting cut pitch of the helical combs~~, that~~ ; wherein the cylindrical casing inner surface surrounding the activator and ~~the~~ a discharge worm ~~is provided with~~ includes multistart, helical notches constructed with a pitch of 0.5 to 1.5 times smaller than ~~the~~ a starting cut pitch of ~~the~~ notches on the activator and the combs of the discharge worm in the straight and reverse directions, the ratio of ~~the~~ extensions of the activator and the discharge worm along ~~the~~ their rotation axis being in the range of 0.2:1 to 1:0.3 of said working surfaces of the activator, the discharge worm and the casing on the replaceable sleeves being on one side of the sleeve, and on the other side of the sleeve are cut helical channels with ~~a larger~~ an increased surface area of the sleeve walls for pumping the cooling medium, the multistart, helical notches being constructed with a semicircular profile with a radius which is 0.005 to 0.03 times the discharge worm diameter and a depth which is 5 to 15% smaller than the discharge worm radius, and the ratio of the number of notches in the straight and reverse directions being in the range of 0.3:1.0 to 1.0:0.3.

8. (Currently Amended) The apparatus according to claim 7, wherein the replaceable, detachable sleeves of the casing and the shaft are constructed in the form of one or more parts.

9. (Previously presented) The apparatus according to claim 7 wherein the casing is constructed in the form of one or more parts.

10. (Previously presented) The apparatus according to claim 7 wherein the annular clearance between the activator and the discharge worm and the casing inner surface is 1.4 to 2.5 times and the depth of the multistart notches on the casing and activator are 2.0 to 4.5 times larger than the annular clearance between the compacting worm and the casing inner surface.

11. (Previously presented) The apparatus according to claim 7 wherein the ratio of the extensions of the first and second size reducing zones along the rotation axis is in the range of 0.5 to 1.2.

12. (Currently Amended) The apparatus according to claim 7 wherein the working surfaces of the ~~removable~~ replaceable, detachable sleeves of the casing and the shaft have been treated with materials containing tungsten, chromium, nickel, boron, molybdenum, as well as carbides and nitrides of very high melting point metals, in the presence of fluoroorganic substances.